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This thesis provides a functional description for a shipboard training administrative subsystem designed to supplement the existing shipboard automated administrative management system with the ability to track the training requirements listed in the U.S. Navy Standard Organization and Regulations Manual. Presently, there is no standard automated training administrative application in the fleet and therefore shipboard managers are administratively burdened with keeping all training records manually. The proposed Training Management Subsystem will perform functions in support of planning, monitoring and documenting shipboard training events. The training applications in this subsystem are designed to operate on hardware and software already provided by existing shipboard SNAP systems.

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SNAP-III TRAINING ADMINISTRATIVE SUBSYSTEM
INTEGRATED FUNCTIONAL DESCRIPTION

by

Conrad C. Chun
Lieutenant, United States Navy
B.S., United States Naval Academy, 1986

and

William R. Estrada
Lieutenant, United States Navy
B.A., University of South Florida, 1983

Submitted in partial fulfillment
of the requirements for the degree of

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Department of Administrative Sciences

ABSTRACT

This thesis provides a functional description for a shipboard training administrative subsystem designed to supplement the existing shipboard automated administrative management system with the ability to track the training requirements listed in the U.S. Navy Standard Organization and Regulations Manual. Presently, there is no standard automated training administrative application in the fleet and therefore shipboard managers are administratively burdened with keeping all training records manually. The proposed Training Management Subsystem will perform functions in support of planning, monitoring and documenting shipboard training events. The training applications in this subsystem are designed to operate on hardware and software already provided by existing shipboard SNAP systems.

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I. INTRODUCTION

The purpose of this thesis is to provide the Navy Management Systems Support Office (NAVMASSO) with a functional description for a Training Administrative Subsystem that will satisfy the training documentation requirements listed in the U.S. Navy Standard Organization and Regulations Manual (SORM) and can be implemented in existing shipboard non-tactical automated information systems.

The functional description is enclosed in Appendix A and has been written in accordance with DOD-STD-7935A. Its purpose is to provide personnel involved in the planning and programming of software for shipboard systems with a basic understanding of what the user needs the application to accomplish. The functional description will be used by NAVMASSO to write system specifications and modify existing systems' software (or develop new) in order to meet the user's needs.

The current automated administrative system installed in all U.S. Navy surface and subsurface units (with the exception of mine-sweeping units and fast patrol boats) is the Shipboard Non-Tactical Automated System (SNAP). The SNAP system has been installed onboard Navy surface ships and submarines since 1982. The end users were initially satisfied with the implementation process and the overall system performance. In

the case of automated training programs, however, the SNAP system has been deficient in supporting the shipboard training documentation needs. In 1987, a thesis titled SNAP II: Training Administrative Enhancements [Ref. 1] recommended a series of training management enhancements to the SNAP Administrative Data subsystem (ADM) to aid in reducing the administrative burden that U.S. Navy personnel experience in managing shipboard training programs. These recommendations were based on the results of a survey made by the Pacific and Atlantic Fleet Commanders for recommendations concerning improvements to the SNAP II ADM subsystem in 1986, soon after they were assigned functional responsibility for the SNAP program.

The training administrative enhancements recommended in Ref. 1 are:

- Upgrading the Personnel Qualification Standards (PQS) Program.

- To provide automated support for the tracking and scheduling of formal school requirements.

- To provide automated functions which support the planning, execution, monitoring and documenting required for shipboard training.

- To provide automated support for the development and maintenance of the long range training plan.

- To provide automated support for the development and maintenance of the short range training plans.

- Develop support for maintaining training accomplishment records.

The first two recommendations listed above have already been acted upon by the SNAP functional manager and NAVMASSO. A schools tracking application has been developed and the SNAP PQS program is currently being upgraded to meet shipboard requirements. This document provides the integrated functional description presenting the remaining recommendations. The proposed Training Administrative Subsystem is expected to reduce the amount of time required for the review and update of shipboard training programs by at least 50%.

A current assessment of SNAP-II system's training application is given in Chapter II. Chapter III summarizes the enhancements proposed in Appendix A. A feasibility assessment of the proposed application on present and future shipboard non-tactical automated systems is contained in Chapter IV, with conclusions and recommendations appearing in Chapter V. Appendix B discusses the PQS and Schools applications in the context of the Training Administrative Subsystem.

II. SHIPBOARD TRAINING PROGRAM ASSESSMENT

Presently, SNAP systems do not support the automation of shipboard training programs.[1] The lack of an automated tracking application for training events has left shipboard personnel with the administrative burden of maintaining all training records by hand.

The SNAP program series I and II were initiated in response to a Chief of Naval Operations (CNO) objective to reduce the administrative burden on shipboard personnel, which would have a resultant improvement in fleet readiness. The system was designed for a life cycle of twenty years and it provides automatic data processing equipment to surface ships and submarines in the maintenance, supply, pay and personnel areas.

The current SNAP-II ADM subsystem provides automated interactive administrative support to shipboard personnel. This ADM subsystem is designed to meet internal record keeping and reporting requirements associated with shipboard administrative functions. The major functions and subfunctions available in the SNAP ADM subsystem are listed in the SNAP-II Administrative Data Subsystem Specification

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[1] Phone conversation with J. Unsedt, Information Systems Division, Commander in Chief, U.S. Atlantic Fleet, Norfolk, VA, 12 March 1992.

[Ref.2]. Currently there are no functions or subfunctions in the SNAP ADM subsystem that support shipboard training documentation requirements.

A summary of the impact of training programs on fleet units as well as assessments of training program management throughout the fleet is presented in this chapter.

A. TRAINING PROGRAM IMPACT

Fleet units are required to maintain administrative programs to document the scheduling and completion of training events. The training requirements which require documentation range from rate specific to ship wide damage control training. The personnel requirements, methods and procedures required to properly manage these training programs are outlined in OPNAVINST 3120.32C (SORM).

Unit training is the responsibility of each command. The commanding officer is responsible for the scheduling and accomplishment of training in his unit. A training plan consists of training events and exercises listed by date in various formats. The SORM requires that every command must maintain a Master Training Plan, containing the unit's long range training plan along with its required training exercises, inspections and unique requirements. The SORM also requires each department to maintain its own long range training plan and each division to maintain a short range

training plan consisting of a quarterly, monthly and weekly training plan. Additionally, the SORM requires that each unit maintain individual training records that reflect personnel documentation of completed training events. These plans and requirements are explained in greater detail in Appendix A. Other instructions which outline these requirements are:

- OPNAVINST 3541.1C (Shipboard Damage Control Readiness)
- OPNAVINST 3540.4D (Propulsion Examining Board for Conventionally Powered Ships)
- COMNAVSURFLANT 3540.1C (Engineering Department Organization Manual)

B. 1987 ASSESSMENT OF TRAINING PROGRAMS

Various activities are responsible for evaluating fleet units in their mission area capabilities. Every activity which inspects, examines, certifies, or assists a unit or ship will review some facet of the unit's training programs as a way of measuring mission area readiness. These inspections provide feedback to the unit's commanding officer and his superiors on how well the ship or unit is prepared to ultimately fight a war. In many cases, training programs are considered a critical success (or failure) factor in a particular mission area. A detailed summary of the various inspection and assist teams, with typical inspection findings (up to 1987) in the area of training program management, is contained in Ref.1. Of particular interest were the following

Propulsion Examining Board's (PEB) examiners comments: [Ref. 1: p.57]

- No standardization of training documentation is maintained among fleet units. Each unit maintains OPNAVINST 3120.32 requirements differently.

- No means established to identify personnel missing scheduled training.

- No method of tracking scheduled training from the long range schedule to an individual on a weekly or daily basis.

- No clear cut guidelines on how a training program should be maintained so that there is commonality between fleet units.

- The methods within a command for maintaining training administration requirements is not uniform from department to department or division to division within a department.

- The methods available are lacking in supporting the scheduling of training, documenting those who attended, rescheduling training, and determining when certain training is to be conducted.

- No tracking of training conducted which crosses divisional or department boundaries.

C. CURRENT STATUS OF TRAINING MANAGEMENT PROGRAMS

As previously mentioned, there currently is no automated training management application in shipboard SNAP systems. Shipboard personnel spend approximately 56 manhours per week[2] (224 monthly manhours) updating and reviewing training records. The SORM allows for the use of automated systems to

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[2] Figures based on authors' experience with destroyer-size ships, with approximately 250 personnel, 18 work centers and 5 department heads.

maintain training administrative requirements, but does not include accepted format(s) other than the ones already specified for manual methods.

The current situation in the fleet has not changed much since the recommendations in Ref. 1 were made. The decrease in costs of personal computers and software products has made it possible for units to create their own training management programs in the fleet.

"The quality of the training management programs has improved. However, there is still no standard automated training management application for Navy units. Roughly 70 percent of the ships inspected by us (PEB) are still using manual procedures to maintain their training records. The rest of them are using various types of off-the-shelf software to maintain their training programs. It has become increasingly difficult to evaluate a ship's capability to manage a training program without an up to date fleet standard."[3]

The Training Administrative Subsystem whose integrated functional description is enclosed in this thesis will provide the shipboard training manager with the automated tools necessary to schedule and document all training events without the added administrative paperwork burden. This automation

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[3] Phone conversation with LT Emcinias, training program evaluator, Pacific Fleet Propulsion Examining Board, San Diego, California, 1 July, 1992.

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could amount to a reduction in work of up to 30 manhours per week (120 monthly manhours). Additionally, the subsystem described in Appendix A provides a fleet standard that will allow for easier evaluation of fleet training programs.

III. PROPOSED TRAINING ADMINISTRATIVE ENHANCEMENTS

The Training Management Subsystem proposed in the functional description enclosed in Appendix A contains enhancements designed to track shipboard training requirements and maintain required training plans and records.

A. THE TRAINING MANAGEMENT SUBSYSTEM

The Training Management Subsystem will perform functions which will support the planning, execution, monitoring and documentation required for shipboard training programs. This training subsystem is comprised of three major applications:

1. Long Range Training Plan
2. Short Range Training Plan
3. Individual Training Records

The functionality of these three training applications are described in additional detail below. The whole idea behind the training management subsystem is to provide continuity between the unit's long range training plan and any shipboard division or work center's weekly training plan. Continuity in scheduling allows for a smoother coordination of training efforts throughout the command.

1. Long Range Training Plan

The long range training application will allow the user to create or modify a unit or departmental long range training plan with data obtained from selected databases or on-line user interaction. This application will use various data base files to provide automation for:

- The creation of a Long Range Training Plan.

- The deletion or modification of selected long range training plans.

- The review and printing of the long range training plan and selected data base files.

- Display and printing of responses to queries.

2. Short Range Training Plans

This application will allow the user to create and maintain short range training plans through usage of various data base files, including the Long Range Training Plan. The Short Range Training Plan will use a calendar generator interface with which the user may designate one or more data base files to accomplish the following:

- The addition, modification or deletion of elements in user accessible fields in applicable data base files.

- The ability to review/print selected data base files.

- The ability to generate the quarterly, monthly or weekly training plan(s).

- The printing or reviewing of any of the short range training plans by division, department or command.

- The ability to create, modify, review or print muster lists for personnel required to attend a training event.

- The addition/deletion of personnel from the muster list and status of personnel with respect to the event; i.e., present, absent, other.

- Event status update (i.e. complete, incomplete, rescheduled).

- Automatic update of individual training records from the muster lists.

- Tracking of individuals who have not completed specified training events.

- Display and printing of response to queries.

3. Individual Training Records

These records will reflect individual documentation of training events on the short training plan for those crew members who attend the specified training event. This application will allow for the following:

- The ability to display or print training records by event, individual, division or department.

- The ability to add, modify or delete individual training records.

IV. FEASIBILITY ASSESSMENT

A. TRAINING MANAGEMENT SUBSYSTEM FEASIBILITY

The Training Management Subsystem is designed to operate on commercial computer hardware and software already provided by any of the SNAP systems (SNAP-II, SNAP-III or micro-SNAP). The SNAP hardware and software environment is not expected to change, therefore the same procedures for system operation, maintenance, backups, storage and updating should be maintained. The implementation of the Training Management Subsystem may require changes in the software programming requirements to allow for the building of new files and screen presentations. The subsystem will support interface between its own applications as well as with the existing shipboard SNAP system.

The functional manager for SNAP systems (Commander in Chief, Atlantic Fleet (CINCLANTFLT) Information Systems Division) and NAVMASSO both expressed their desire for a functional description for a shipboard training administrative subsystem. NAVMASSO has reviewed the Training Administrative Subsystem functional description (Appendix A) and concluded in their assessment that the training subsystem proposed provides a shipboard automated tool necessary to fulfill shipboard training documentation requirements. The Training Administrative Subsystem integrated functional description

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will be submitted as a formal proposal to the applicable government agencies via separate document and correspondence.

B. CURRENT SNAP SYSTEMS IN THE FLEET

Since 1982, various studies and improvements have been made on the SNAP system. None of these improvements included a training administrative application.

Micro-SNAP II is a network of microcomputers designed to duplicate the functionality and capability of SNAP-II. Its purpose is to establish a foundation for SNAP-III, such that technological advances can be incorporated without adverse effect, while using affordable off-the-shelf technology. A prototype of the SNAP-III system, a fiber-optic Local Area Network of UNIX terminals with Oracle-based database management system, has been installed on the USS John F. Kennedy. Both Micro-SNAP and SNAP-III lack a training administrative application. The proposed Training Management Subsystem will
provide the needed training management application without creating additional software or hardware requirements.

V. CONCLUSIONS AND RECOMMENDATIONS

Given the diversity and magnitude of the SNAP program, a considerable degree of success has been achieved in implementing an interactive computer system on independent afloat units. In the area of training administration, however, the SNAP system does not provide an automated tool to aid shipboard personnel in the day-to-day management of training programs. Fleet and unit commanders face an every day challenge of balancing training requirements to ensure the highest possible degree of operational readiness. Without an automated means for managing these day-to-day training requirements, shipboard training managers face an additional administrative burden in ensuring their personnel are being properly trained to fight a war.

The proposed Training Management Subsystem provides the methods and means for command personnel to achieve the requirements set forth in the instructions listed in chapter II without the additional administrative burden imposed by maintaining these systems manually. It has been the authors' experience that approximately 224 manhours per month are spent manually updating and reviewing training documents in a destroyer-size ship with 18 work centers and 250 personnel. We have estimated that the Training Management Subsystem could

reduce this time by at least 50% (from 224 to 104 monthly manhours). Additionally, the proposed training subsystem will provide a standard command training program which will provide uniformity among fleet units, therefore achieving a reasonable standard by which all units can be evaluated.

Appendix B contains additional recommendations to an existing application for formal school tracking which could be beneficial in expanding the scope of automation of training administrative subsystems for the SNAP program.

APPENDIX A:

NAVAL POSTGRADUATE SCHOOL
MONTEREY, CALIFORNIA

INTEGRATED
FUNCTIONAL DESCRIPTION

for

Training Management Subsystem

Shipboard Non-tactical ADP Program III

9 June 1992

Training Management Subsystem Integrated Functional Description

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Note: The version of the Integrated Functional Description that
has been sent to CINCLANTFLT (Code N64) and NAVMASSO has the IFD
beginning on page 1 vs. page 21. The page numbering is due to
the required format for this thesis.

SECTION 1.   GENERAL

1.1 Purpose of the Functional Description.   This functional
description for the Training Management Subsystem of the
Shipboard Non-tactical ADP Program (SNAP) III Automated
Information System is written to provide:

   a.   The system requirements to be satisfied which will serve
        as the basis for mutual understanding between the user
        and the developer.

   b.   Information on the performance requirements, preliminary
        design considerations, and user impacts including fixed
        and continuing costs.

   c.   A basis for development of system tests.

1.2 Project References.   Documents applicable to the subsystem
development of this document include the following:

   a. SNAP II Integrated Functional Description of 30 March
      1981.

   b. SNAP II AIS System Specification of 30 June 1981.

   c. DOD Automated Information Systems (AIS) Documentation
      Standards (DOD-STD-7935A) of 15 February 1983.

   d. SNAP II AIS Administrative Data Management (ADM)
      Subsystem Specification of April 1986.

   e. OPNAVINST 3120.32C Subj: Standard Organization and
      Regulations Manual of the United States Navy

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f. OPNAVINST 3541.1C Subj: Shipboard Damage Control
   Readiness   .

g. OPNAVINST 3540.4D Subj: Propulsion Examining Board for
   Conventionally Powered Ships

h. OPNAVINST 3500.4D Subj: Personnel Qualifications
   Standards (PQS) Program

1.3 Terms and Abbreviations.   This subsection defines the
acronyms and abbreviations that are used in this document.

ADM	Administrative Data Management (Subsystem)
ADP	Automated Data Processing (System)
AIS	Automated Information System
CDA	Central Design Activity
CNO	Chief of Naval Operations
DFD	Data Flow Diagram
DOD	Department of Defense
GMT	General Military Training
IAW	in accordance with
ID	identification
IFD	Integrated Functional Description
ISIC	Immediate Superior in Command
IUC	Intermediate Unit Commander
LRTP	Long Range Training Plan
NAVEDTRA	Naval Education and Training
NAVMASSO	Navy Management Systems Support Office
OPNAVINST	Naval Operations Instruction
OPPE	Operational Propulsion Plant Examination
PQS	Personnel Qualification Standards
QUAL	Qualification
QPF	Qualification Personnel File
SAF	Ship Assist Visit File

SCVF	School Validation File (TYCOM)
SEICF	Ship Examination/Inspection/Certification File
SEXF	Ship Exercise File
SLF	Ship Lecture File
SNAP	Shipboard Non-tactical ADP Program
SORM	Standard Organization and Regulations Manual (OPNAVINST 3120.32B)
SRTP	Short Range Training Plan
STD	Standard
SURF	Ship Unique Requirement File
SVF	School Validation File
TYCOM	Type Commander
WP	word processor

SECTION 2.   SYSTEM SUMMARY

2.1 Background.   The current version of SNAP is deficient in
its ability to maintain shipboard training programs in accordance
with the navy SORM.   The intended use of this subsystem is to
automate shipboard training schedules and maintain training
records that are currently produced manually. Development of
this subsystem will further reduce the administrative burden of
the fleet, which is the original purpose of the SNAP system.

2.2 Objectives.   The objective of the proposed subsystem is to
support fleet units in meeting their administrative training
program requirements. This subsystem will perform functions
which support the shipboard training requirements mandated by the
Secretary of the Navy and the Chief of Naval Operations' fleet
wide instructions and directives. Additionally, this subsystem
will eliminate the time consuming aspects associated with the
manual maintenance of training schedules and records. The
primary goals of the subsystem are as follows:

    - Provide for the automation of shipboard training
    documentation, to include training plans and records to be
    used by fleet-wide units and inspection teams.

    - Provide an interactive capability for administrative
    support in planning, recording and documenting shipboard
    training requirements.

2.3 Existing Methods and Procedures.   This proposed subsystem
is designed to replace manual shipboard procedures used to
support shipboard training programs. These procedures, although
similar on all ships, vary slightly from fleet to fleet, TYCOM to
TYCOM, and hull type to hull type. Further, data base volumes as
well as transaction volumes differ significantly from class to
class and ship type to ship type. The manual procedures proposed

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for enhancement are listed below.

A. Organizational and Personnel Responsibilities.

Training policies for all U.S. NAVY units and shore activities are set forth in OPNAVINST 3120.32B. Implementation procedures are contained in the various Type Commander instructions. Unit training is the responsibility of the command. The unit commander (commanding officer) has control over training accomplished in his/her unit and is directly involved with the performance of personnel at work and watchstations.

A training plan consists of training events listed by date in various formats. These plans are explained in greater detail below.

1. <u>Long Range Training Plan</u>. The unit's training officer and the department heads are responsible for developing and maintaining the long range training plan. Each department head consolidates the information required for the long range training plan IAW OPNAVINST 3120.32B (Navy SORM, Chapter 8) for all divisions within his/her department and forwards his/her department's inputs to the training officer. The training officer consolidates all departmental long range training plans, adds all unit level training requirements (e.g. General Military training, Unit's Indoctrination Training, etc.) and presents it to the commanding officer via the executive officer for approval. Once approved by the commanding officer, this consolidated package becomes the Unit's Long Range Training Plan and a copy is provided to each division within the unit. The training officer is responsible for maintaining the unit's long range training plan and is provided with updated information once a quarter.

2. <u>Short Range Training Plan</u>. This plan is the mechanism for planning and scheduling training. The short range training plan includes the following:

- The Quarterly Training Plan

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- The Monthly Training Plan
        - The Weekly Training Plan

The Quarterly Training Plan is a subset of the Long Range
Training Plan. The purpose of the quarterly training plan is to
indicate, to each division, unit plans that may affect the
scheduling or conduct of divisional training. Once the quarterly
training plan is developed, department heads add any additional
departmental requirements (e.g. required exercises, drills, etc.)
and provide a copy to each division. Training planning and
scheduling for periods shorter than the quarter will be on a
Departmental level.
     Monthly and Weekly Training Plans are subsets of the
Quarterly Training Plan, with additional divisional events.
Maintenance of these plans are usually delegated to a senior
petty officer in each division, who is closely supervised by the
division officer and chief petty officer. The division officer is
overall responsible for the planning and scheduling of training
within his/her division.

     3. Individual Training Records. Training records reflect
personnel documentation of completed training events. Every
training session must be recorded. Each divisional training petty
officer maintains records for personnel assigned to his/her
division.

B. Equipment Being Used.

     As delineated in OPNAVINST 3120.32B, all training plans,
schedules and records may be either typed, handwritten, or
maintained on ADP/WP systems (e.g. Shipboard Non-Tactical
Automatic Data Processing Program (SNAP)). Currently, maintenance
of shipboard training records is being conducted manually most of
the time. In some cases calendar generating, word processing and
data base management software is being used on shipboard

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microcomputers; however, no system-specific guidance exists. The SNAP system is being used on some ships to maintain PQS records; however, its capabilities are limited.

C. Inputs and Outputs (including volume and frequency).
    1. Command Long Range Training Plan.
        Inputs: Department Long Range Training Plans via the training officer, employment schedule and department/divisional requirements.
        Outputs: Command Long Range Training Plan. Should contain training plan for a minimum of one year. Updated every 13 weeks at a minimum.

    2. Short Range Training Plan.
        Inputs: Quarterly Employment Schedule/Department and divisional requirements.
        Outputs: Quarterly Training Plan, Monthly and Weekly Training Plans. Divisional training petty officers update monthly and weekly training plans weekly. Quarterly Training Plans are updated on a weekly basis at the Planning Board for Training.

    3. Training Records.
        Inputs: Training lecture or evolution name (or number), names of attendees, instructor, date.
        Outputs: Record of lecture name (or number), date and instructor for each attendee recorded after each training evolution.

D. Provisions in system design in cases of emergency, disaster or accident.
       With maintenance being conducted mostly manually, there

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are virtually no provisions for emergency operations, other than keeping separate copies of every record. For ships using the SNAP system to keep PQS records, the system maintenance personnel conduct frequent backups on magnetic tape which can be physically transferred to another system in case of an emergency. For training documentation being kept on microcomputers, provisions for emergencies are made by making copies of the system(s) and data on floppy disks. There are no provisions made for operation in degraded modes.

E. Deficiencies and Limitations.

While the Department of Defense continues to stress the need for a paperless NAVY, surface units continue to store too many records and duplicate copies of records. In the case of shipboard training plans, this represents a particular burden because of the need to update and rewrite plans frequently. Inspection teams who evaluate training programs such as OPPE (Operational Propulsion Plant Examination) and the IUC (Intermediate Unit Commander) see a variety of manual and computerized methods which make it difficult to effectively evaluate training programs from one unit to the next.

2.4 Proposed Methods and Procedures. The proposed training subsystem functions will support at a minimum the requirements outlined in the following instructions:

- OPNAVINST 3120.32C Subj: Standard Organization and Regulations Manual of the United States Navy

- OPNAVINST 3541.1C Subj: Shipboard Damage Control Readiness

- OPNAVINST 3540.4D Subj: Propulsion Examining Board for Conventionally Powered Ships

The training subsystem is comprised of three major applications.

    1. Long Range Training Plan

    2. Short Range Training Plan

    3. Individual Training Records

Figure 2-1: Proposed Training/PQS Subsystem Enhancements

*   SUPPORTING DEVELOPMENT AND MAINTENANCE OF LONG RANGE
    TRAINING PLAN

*   SUPPORTING DEVELOPMENT AND MAINTENANCE OF SHORT RANGE
    TRAINING PLAN

*   MAINTAINING INDIVIDUAL TRAINING RECORDS

The data base files used by this proposed subsystem will be constructed and provided by the CDA. The CDA will utilize all applicable instructions needed to construct the initial data base files and will be responsible for promulgating directives for the updating of these files.

Figure 2-2: Level 0 Data Flow Diagram

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Long Range Training Plan.   The Long Range Training Plan function will allow the ability to create and modify the command long range training plan, specifically, through interaction with selected data base files.

Short Range Training Plan.   The Short Range Training Plan function will allow the user to create and modify short range training plans in specified format (i.e., quarterly, monthly, weekly).   This function will contain various subfunctions, which are listed in section 3.

Individual Training Records.   This function will provide the ability to maintain individual training records.

2.4.1 Summary of Improvements.   As the system will be designed to automate current functions and not interject new systems, the primary savings of the system is in the reduction of the administrative burden by eliminating requirements to keep certain manual records, which will now be kept in online files. Since the system will automatically generate many currently manual reports, the need to prepare or rewrite certain reports manually will be eliminated.   It is also anticipated that there will be a reduction in error rates and associated time to screen and correct documents because of online validation of data.

2.4.2 Summary of Impacts.   The automation of shipboard training programs will decrease the administrative burden placed on personnel.   Furthermore, inspecting activities will have more readily accessible training information to determine a unit's overall operational readiness.   Additional impacts are stated below.

2.4.2.1 User Organizational Impacts. The expected result is considerable time savings in the management of shipboard training programs. Personnel using this subsystem can be more effective and efficient in their job performance. As the administrative task of maintaining training programs is more rapidly completed in comparison to the manual methods, personnel should be more available to concentrate on other shipboard duties. No anticipated unit manning reduction is expected as a result of this subsystem. On the other hand, it will be necessary to train individuals on the maintenance of the data bases that this proposed subsystem will utilize.

2.4.2.2 User Operational Impacts. As fleet utilization of SNAP increases, overall unit readiness should increase. This increased readiness reflects the manpower reduction achieved in meeting administrative requirements and redirected toward improving operational readiness. The fleet's increased efficiencies should extend to shore activities, as more accurate and timely information is provided from the fleet. In addition, users will have greater accessibility to shipboard training requirements.

No further modifications are required to the SNAP operating procedures during increased conditions of operational readiness. The beneficial impact grows as the readiness condition increases because information is more readily available.

For this subsystem, there are no additional data sources. Data sources that are now used to provide inputs into shipboard training plans are sufficient.

2.4.2.3 User Development Impacts. As training administration requirements change, so too must the automated applications and the data bases. Fleet personnel must be solicited for information which will aid in improving and enhancing the initial revisions to data bases and applications.

Training tools (i.e., manuals and desktop guides) must be made available by the central design activity (CDA) and must be well structured and clearly written. Documentation must show actual screens and procedures to move from application to application. The user should be able to follow the directions and procedures within each application. On-line help screens should clearly present information and refer users to the actual reference manual pages for further explanation, if needed. This feature is intended to ensure supporting documentation actually reflects the application installed. All manuals and desktop guides must be updated to reflect the latest system version.

The implementation of this subsystem is intended to be done in parallel with the existing manual system. A successful implementation will be dependent upon how well the implementation team trains the users and explains the new applications and data bases.

2.5 Assumptions and Constraints.

A. Assumptions. The prime assumption associated with these enhancements is the desire by all activities both afloat and ashore to reduce the fleet administrative burden. Jointly, the groups should be able to apply this subsystem, and in the future, propose new applications for this subsystem to reduce the administrative burden of training plan construction/maintenance.

SNAP operating environment and personnel requirements are not expected to change. The same procedures for daily operation, backups, updating and troubleshooting will be maintained.

B. Constraints. Personnel manning levels, equipment procurement and service support contracts are expected to be reduced in order to remain within budgetary limitations. Therefore, management will have to ensure the proper tools are provided to improve personnel productivity and increase readiness.

Computerization of future training administrative directives and procedures must be achieved if the overall potential of the system benefits are to be attained.

SECTION 3.   DETAILED CHARACTERISTICS

3.1 Specific Performance Requirements. The Training Management
Subsystem will allow user online interface for creating/updating
the Long Range Training Plan, Short Range Training Plan, Training
Accomplishment Records, PQS records and obtain the necessary
reports from each of these applications in accordance with the
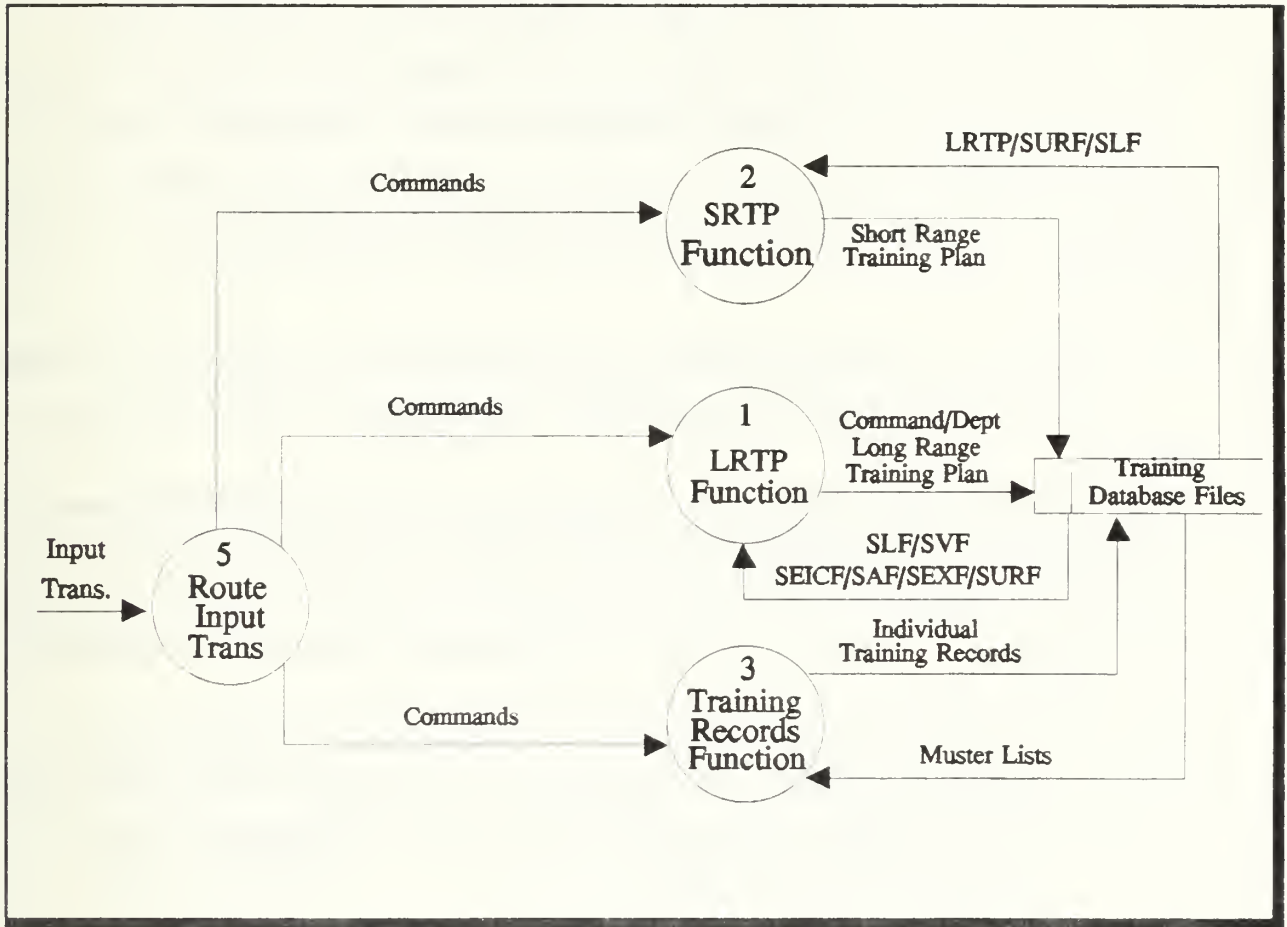NAVY Standard Operations and Regulations Manual and the PQS
Manual.

3.1.1 Accuracy and Validity. Input to this subsystem will be
obtained via interactive online input from users. The inputs will
be validated prior to applying the transactions to the already
existing data base. Inputs failing validation during online input
will generate error messages for immediate correction by the
user. Data base accuracy standards for this subsystem should be
comparable to standards as set forth in current SNAP system.

3.1.2 Timing. Timing standards should be comparable to current
standards set forth in existing SNAP system: "The subsystem will
provide, as a goal, a response time of three seconds or less for
data entry queries/actions, where single file access and/or data
element validation is required. Response to a query/action is
defined as the time required from the execution of the
query/action by appropriate transmittal (e.g., hitting the
'ENTER' key to transmit data, hitting a Program Function Key to
generate an interrupt, etc.), until the first character of the
complete response is displayed on the terminal. Queries/actions
requiring multiple file accesses and/or building of new files or
lists which would legitimately require in excess of five seconds
will display a screen indicating that action is in progress."

3.2 Functional Area System Functions.   Specific details and
design characteristics of applications and data base files are
provided in following sections.   The Level 1 Data flow diagram

depicting the major functions is provided in figure 3.1.

Figure 3.1 Level 1 Data Flow Diagram

3.2.1 Long Range Training Plan.   This function will utilize
data base files to automate the requirements set forth in the
SORM. This application should allow for the following:

   - Provide the ability to create a long range training plan
   from selected data base files.

   - Provide the ability to delete or modify selected file
   records (long range training plans).

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- Provide the ability to review/print selected data base files within parameters set by the user.

3.2.2 Short Range Training Plan.   This function involves the use of a Calendar Generator application to provide the user a means to generate a Short Range Training Plan from data base files and the Long Range Training Plan. The Short Range Training Plan application will allow the user to select either a weekly, monthly or quarterly calendar format to display/print user scheduled training events. This application should allow for the following:

- Provide the ability to add/delete/modify elements in user accessible fields to applicable data base files (SURF,SLF).

- Provide the ability to review/print selected data base files within the parameters set by the user.

- Generate the Training Plan (quarterly, monthly, weekly).

-- Provide the ability to review/print the Training Plan using either individual or combined data base file by command, department, division, workcenter or a combination of these.

-- Provide the ability to create/modify/review/print muster lists (by department, division or event) of those personnel required to attend/participate in an event. This will include adding/deleting personnel from the muster list associated with the group to participate in the event, as well as indicating the status of those personnel on the muster list with respect to the event; i.e., whether present or absent.

-- Provide the ability to mark an event as completed, incomplete or rescheduled. This should include an update of the associated data base file in addition to an indication on the calendar display reflecting the status of the training event.

-- Provide the ability to automatically update individual training records from the muster lists.

-- Provide the ability to track individuals who have not completed specified events.

-- Provide the ability to display/print a list of those who have attended a specified event.

3.2.3 Individual Training Records.   These records will reflect individual documentation of completed events on the Short Range Training Plan for those crewmembers who attend the specified training event.   This application should allow for the following:

- Provide the ability to display/print training records by individual, division or department. The ability to list the training records for the above groups keyed by training event or date.

- Provide the ability to add/delete/modify individual training records. Deletion should allow the option of printing a final record for a crewmember in the event of duty station transfer.

3.3 Inputs and Outputs.

A. Inputs

The inputs into the proposed training subsystem consist of

data base maintenance inputs and menu selections. The subsystem
will interact with the data base files as depicted in figure 3.2.

Data inputs can be received from a variety of sources, e.g.,
CRT input by the user, paper tape input containing electronically
transmitted information received from the unit's communication
control room, or magnetic tape received through the U.S. Postal
Service. When telecommunications capabilities are incorporated
into the SNAP system, this should become an additional source.

It is accepted for certain data base files that the initial
data should be provided by the CDA. The files for which the CDA
should initially load, will be identified as each file is
described. Certain data elements contained in these files have
been identified as being non-accessible to the user, to prevent
inadvertent deletion or modification to the data. These data

elements have been identified as non-accessible to permit either
the CDA , some other designated activity or designated shipboard
personnel without negatively impacting command's manpower or data
integrity.

Figure 3.2 Subsystem Inputs

```
 *   LONG RANGE TRAINING PLAN
        - Ship Examination/Inspection/Certification File (SEICF)
        - Ship Assist Visit File (SAF)
        - Ship Exercise File (SEXF)
        - Ship Lecture File (SLF)
        - Ship Unique Requirements File (SURF)
        - School Validation File (SVF)
        - Department/Division Long Range Training Plan

 *  SHORT RANGE TRAINING PLAN
        - Long Range Training Plan
        - Ship Lecture File (SLF)
        - Ship Unique Requirement File (SURF)

 *  INDIVIDUAL TRAINING RECORDS
        - Muster Lists created by Short Range Training Plan
```

All shipboard personnel are potential users of this subsystem. Each user should be granted a level of subsystem access conforming to the extent which data manipulation and report generation is allowed (see section 6 for specific restrictions).

The input of data within a function should be accomplished within normal routine processing and should not require prioritization over other functions. The data elements contain no security classification and therefore, this issue will not be addressed further. The system's responsiveness should be within the normal expected time frame established for SNAP.

The expected volume and frequency of utilization is dependent on the application and expected users.

B. Outputs

Figure 3.3: Subsystem Outputs

```
* LONG RANGE TRAINING PLAN
     - Command Long Range Training Plan
     - Department/Division Long Range Training Plan
     - Responses to User Queries to Data Base Files

* SHORT RANGE TRAINING PLAN
     - Quarterly Training Plan
     - Monthly Training Plan
     - Weekly Training Plan
     - Muster Lists
     - Responses to User Queries to Data Base Files

* INDIVIDUAL TRAINING RECORDS
     - Individual Training Accomplishment Records
```

Subsystem outputs are listed in figure 3.3. Reports generated by this subsystem should be made available to the user on either CRT display or as printed copy. These reports should contain in sufficient detail, information specified as required by applicable instructions; therefore, if administrative requirements change, report formats must have the capability to be easily modified. There is no requirement for the command to maintain pre-printed forms to produce reports.

The reports generated should be accomplished within normal routine processing and should not require prioritization over other functions. All reports required to support these functions are not classified. Sample outputs/suggested formats are provided in appendix B.

3.4   Data Base/Data Bank Characteristics. This section will address the data elements required in each data base file to be used in this subsystem. Data elements are described in accordance with the following conventions. Data base files and elements are further defined in section 4.4.

Element Type	Description
Numeric	Element consist of integers only
Alpha-numeric	Element consist of integers and letters
Date	Date format (yymmdd)
Logical	Contains either a yes (Y) or no (N)
Character	Textual Information with maximum length of 250 characters
Memo	Large volumes of text up to 64K

Ship Examination/Inspection/Certification File (SEICF). This
data base will contain all examinations, inspections and
certifications required of fleet units. Elements for this data
base file are listed below.

Element Name	Description	Type	Size
Requirement Number	Unique number which identifies the event	Alpha-Numeric	5
Requirement Name	Event's official name	Character	
Reference Documents	Source instruction(s) which identify the event	Character	
Required Periodicity	Periodicity (in months) between an event's occurrence	Numeric	2
Applicability	Identifies if event is applicable	Logical	
Last Completion Date	Date event was last completed	Date	
Next Scheduled Date	Next scheduled date for event	Date	
Applicable Training Group	Groups required to participate in event	Character	
Responsible Department	Department assigned responsibility for the event	Character	
Responsible Individual	Individual assigned responsibility	Character	
Remarks	Specific comments about the event	Memo	

Ship Assist Visit File (SAF). This data base contains data used
for scheduling, executing and monitoring assist visits and for
providing status reports. This data base should be identical in
structure to SEICF.

Ship Exercise File (SEXF). This data base will contain all exercises required of fleet units.

Element Name	Description	Type	Size
Exercise Code	Unique Code to be established by TYCOM	Alpha-numeric	
Exercise Name	Exercise Name	Character	
Periodicity	Number of moths required for unit to complete prior to expiration of current M-rating.	Numeric	2
Last Completion Date	Date last comple ed	Date	
Score	Grade assigned as reported in Training Readiness Report	Numeric	3
Evaluation Method	Method in which exercise was observed (i.e., non-observed or observed)	Character	

Training Accomplishment Record. This record contains the status of the training received by an individual. The data elements required for this record are as follows:

Element Name	Description	Type	Size
Event Code	The requirement number that corresponds to the event	Alpha-numeric	5
Event Name	Name of the event	Character	
Instructor	Individual who conducted the event	Character	
Date	Date individual participated in the event	Date	

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Ship Lecture File (SLF).   This data base will contain a listing
of all lectures required to be conducted by a fleet unit. This
data base is structured identical to SEICF.

Ship Unique Requirement File (SURF).   This data base contains
the requirements, events or miscellaneous information which the
user will input based on review of directives. The data base
should be structured in the same format as the SEICF.

School Validation File (SVF).   This data base file already
exists in the SNAP II Administrative Data System (SCVF by TYCOM).
Required modifications for this file are provided in section 4.

User Created Files.   The following subsystem outputs listed in
figure 3.2 are required to be stored in the data base as
individual files.
        - All Training Plans
        - Muster Lists
        - Individual Training Records

3.5   Failure Contingencies.   The training subsystem should
maintain the same standards as set forth in the IFD for SNAP II,
which are listed below.

     a. Backup and Recovery. The system will not allow further
processing beyond a point at which data base integrity might be
lost. The system will protect system integrity by enforcing, at a
minimum, check-point and backup production. When system integrity
is threatened, the system will lock out all further processing
until suitable backups and check-points are taken. The system
will use these selective/total system check-points/backups to
restore the data bases after a failure.

     b. Fallback. The system will be so designed that failure of
devices, other than the Central Processing Unit or all mass

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storage devices, will result in, at most, degraded service or capability. The impact incurred by loss of specific peripherals is defined in the system requirements and specifications for the SNAP-II system.

    c. Degraded Modes of Operation. The system will maintain a transaction logging system sufficient to ensure the reconstruction of all applicable data bases from either backup copies or by applying transactions to a check-point/backup copy of the data bases. The system will provide these services in a manner totally transparent to the user. The system will provide appropriate utilities to aid system management personnel in the reconstruction of all data bases when all facilities are again available.

Section 4.   DESIGN CONSIDERATIONS

4.1   System Description.   An indication of the typical
interactions between users and applications is provided to
enhance the description of the proposed subsystem.

     Long Range Training Plan.   This plan consists of data bases
of administrative and operational requirements listed by date.
As these data bases are initially loaded by the CDA by ship type,
the user should be able to indicate which requirements are not
applicable to the command, e.g., a particular equipment type is
not installed, or a certain function is not performed by the
command.   These data bases otherwise, should only be accessed
through applications.   The Ship Unique Requirements File(s)
(SURF) should be loaded and modifiable by designated command
personnel, e.g., a unique file is assigned to each department
onboard, then the department heads should be allowed to
manipulate the data contained therein as often as the department
head wishes within the limitations specified by the data base
structure.   These data bases replace the manually maintained
requirements lists held by various individuals throughout the
command, and therefore, provide one central location for users to
determine applicable requirements.   It is these data bases that
provide the primary inputs into the long range training plan.
These data bases are explained in detail in section 4.4.

     Short Range Training Plan.   The plans consist of quarterly,
monthly and weekly schedules generated through the calendar
generator interface.   These plans are the key documents used for
planning, executing and monitoring of training requirements in
the long range training plan.   The primary inputs into the short
range training plans will be the events which form the long range
training plan.   The user will also have the capability to input
additional requirements/events which do not appear in the long
range training plan.   Accessing this function through the

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calendar generator interface, the user will designate which format he desires, e.g. quarterly, monthly or weekly, use the long range training plan as a base, then add additional required events by accessing the Ship Unique Requirements File (SURF) and Ship Lecture File (SLF) to construct his short range training plan.

Individual Training Records. These records are generated when a user updates a muster list and requests that records be updated. It is anticipated that the majority of users utilizing this function will be Division Officers and Work Center Supervisors maintaining their training records. The senior Watch Officer is expected to maintain officer training records using this function.
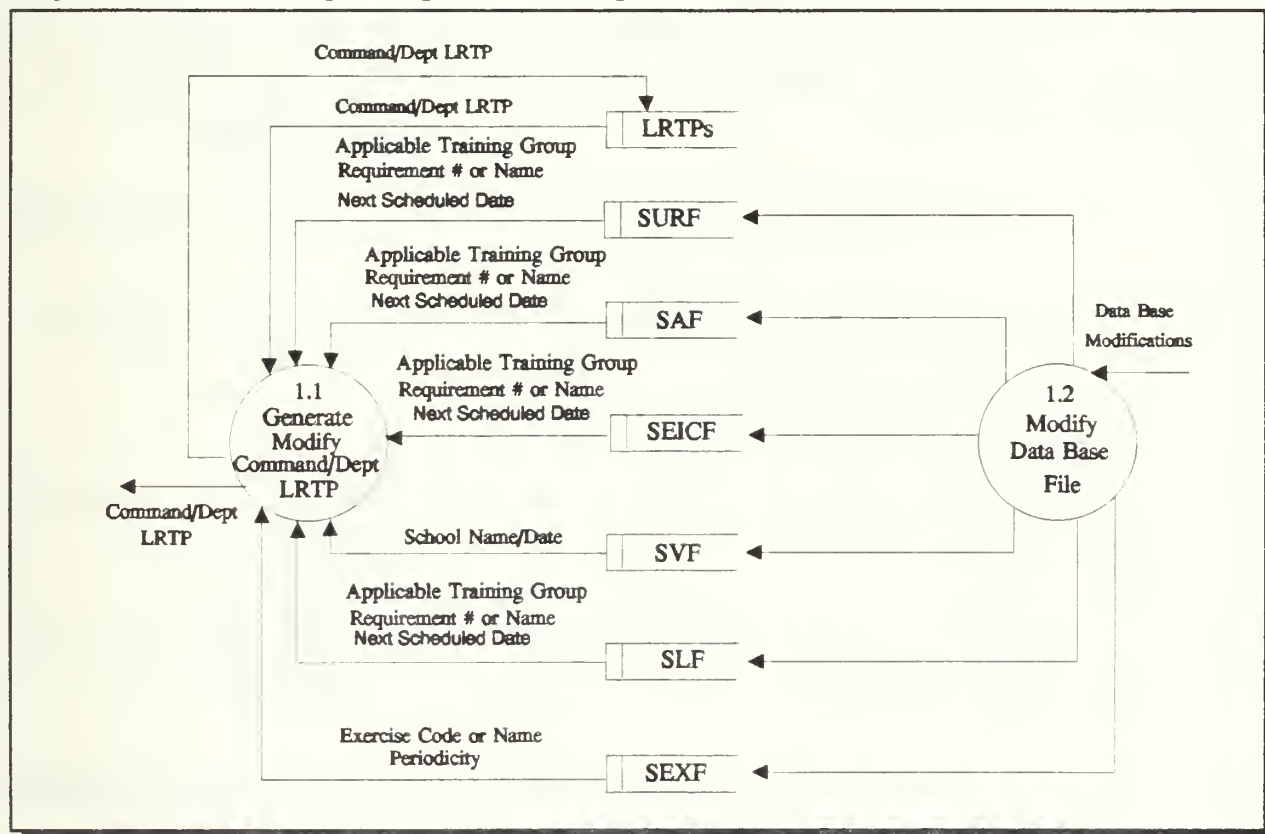
4.2   System Functions. The following paragraphs describe, in some detail, the individual functions of the Training Management Subsystem.

4.2.1 Long Range Training Plan. This function/subfunctions will utilize the aforementioned data base files in section 3.4 to automate the requirements set forth in the SORM for establishment and maintenance of the command Long Range Training Plan.

4.2.1.1   Generate Command Long Range Training Plan. This function will allow the user to generate the Command Long Range Training Plan by consolidating individual Long Range Training Plans created by each department. This function will also provide the ability to update or modify the newly generated Command Long Range Training Plan and save it as a separate file. Additional training events can be accessed from one of the applicable data base files or entered manually if not contained in the data base.

4.2.1.2   Create Department Long Range Training Plan.   This
function will allow the user to create and save as a separate
file a Long Range Training Plan for a department.   These
training plans (files) will provide the base for the Command Long
Range Training Plan.   This function will allow the user to select
events from the applicable data base files or enter events

Figure 4-1:   Long Range Training Plan DFD

manually that are not in the data base.

4.2.1.3   Modify Data base File.   This function allows the user
to Add/Delete/Modify the applicable data base files.

4.2.1.4   Print Data base File.   This function will provide the
user the ability to review/print selected data base files (Long
Range Training Plans or files from applicable data bases) within
parameters set by the user.

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4.2.2   Short Range Training Plan. Utilizing SURF and SLF, along
with the files created by the Long Range Training Plan
function/subfunctions, the Short Range Training Plan
functions/subfunctions will allow the user to create/maintain
short range training plans.

The Short Range Training plan utilizes the calendar
generator interface, which will permit the user to designate one
or more data base files, from which the application accesses
events for printing or displaying in a weekly, monthly or
quarterly schedule. Additional features which this interface
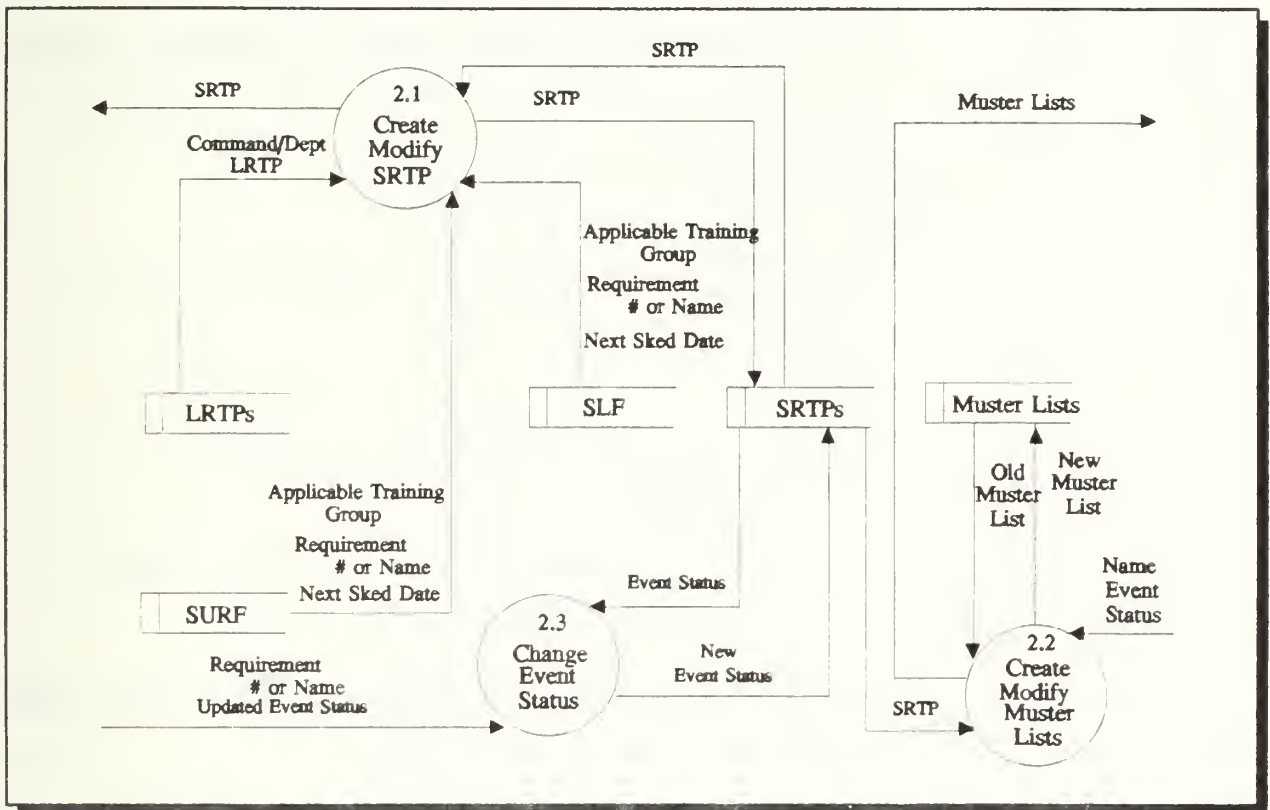should provide are:

- Print Designated data base events apart from the calendar.

- User designates start and end dates for schedule output.

- Use of standard or wide paper.

- Allow for dates containing overflow events to be printed
on additional page.

- Provide for data base updates of completed, cancelled or
rescheduled events.

- Provide for consolidating departmental, divisional, or
work center calendars to create the next organizational
layer calendar, e.g., combine all engineering department
work center calendars to create the engineering department
calendar.

Functions associated with the Calendar Generator/Short Range
Training Plan are listed below.

4.2.2.1   Create Short Range Training Plan.   Provide the ability
to create, in the format specified (Quarterly, Monthly, Weekly) a

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short range training Plan through the use of the calendar
generator interface using either individual or combined data base
files by command, department, division, workcenter or a
combination of these. To create a short range training plan, the
data provided by the Long Range Training Plan serves as a base,

Figure 4-2:   Short Range Training Plan DFD

and additional events are added by accessing applicable data base
files (SURF,SLF) or by manual input.

4.2.2.2   Create Muster List.   Provide the ability to
create/modify/review/print muster lists of those personnel
required to attend/participate in an event.   This is accomplished
by accessing the Applicable Training Group data field from a
specified event in the short range training plan.   This function
will include adding/deleting personnel from the muster list

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associated with the group to participate in the event, as well as indicating the status of those personnel on the muster list with respect to the event; i.e., whether present or absent. The created muster list will have the ability to be saved as a separate file.

4.2.2.3 Change Event Status. Provide the ability to mark an event as completed, incomplete or rescheduled. This should include an update of the associated data base file (muster list) in addition to an indication on the calendar display reflecting the status of the training event. In addition, this function will provide for the following subfunctions.

-- Provide the ability to automatically update individual training records from the muster lists.

-- Provide the ability to track individuals who have not completed specified events.

-- Provide the ability to display/print a list of those who have attended a specified event.

4.2.2.4 Modify Data base File. This function provides the same capabilities as the function in 4.2.1.3.

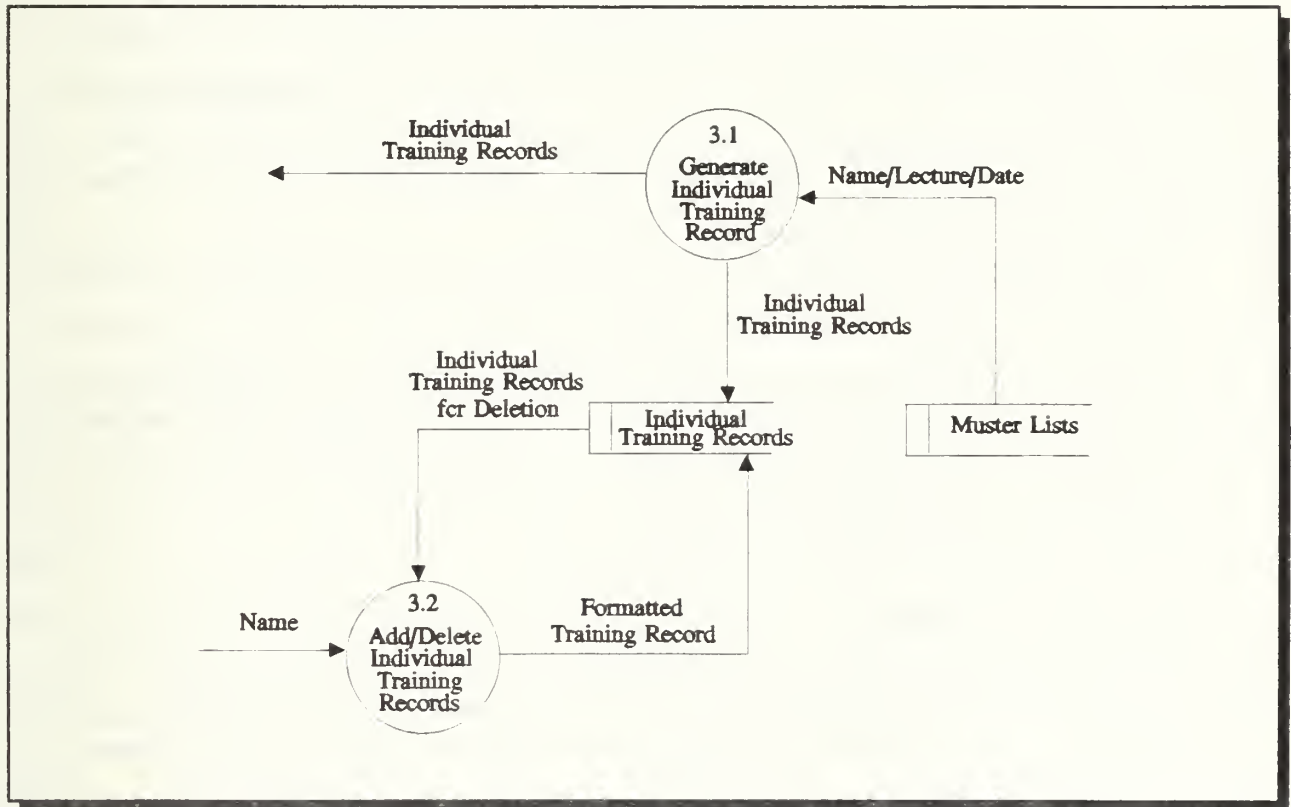4.2.2.5 Print Selected Data base File.
Provide the ability to review/print selected data base files within the parameters set by the user.

4.2.3 Training Records. These records will reflect individual documentation of completed events on the short range training plan for those crewmembers who attend the specified training event. This application should allow for the following:

4.2.3.1 Generate Individual Training Records.
This function will provide the ability to display/print training
records by individual, division or department. The ability to
list the training records for the above groups keyed by training
event or date. This function will access the muster lists, query
them and generate the desired training record.

Figure 4-3: Individual Training Records DFD

4.2.3.2   Modify Individual Training Records.
This function will provide the user the same capabilities
provided in 4.2.1.3.   In addition, deletion should allow the
option of printing a final record for a crewmember in the event
of duty station transfer.

4.3 Flexibility. As administrative requirements change, this proposed subsystem must have the capability to update output formats to conform with updated directives.

This proposed subsystem should be designed to interface with existing SNAP systems as well as future SNAP developments.

4.4 System Data. This section will address the data elements required in each data base file to be used in this subsystem.

4.4.1 Ship Examination/Inspection/Certification File (SEICF). This data base will contain all examinations, inspections and certifications required of fleet units. This data base will interface with the calendar generator application for scheduling, executing and monitoring requirements.

The anticipated number of records to be maintained in this data base are expected to be approximately 100, which includes requirements addressed in CNO Notice 5040 (Subj: Inspection Requirements for Forces Afloat), and those requirements added by the command. This data base should be structured to contain at least the following data elements:

- Requirement Number: A unique number which identifies a particular requirement. The number should be able to identify requirements which are a subset of an overall requirement. It is supplied by the CDA and should be non-accessible to the user.

- Requirement Name or Title: The requirement's long version name, as listed in the reference. It is supplied by the CDA and is non-accessible to the user.

- Reference Documents: The source instruction(s) specifying the requirement. It is supplied by the CDA and is non-accessible to the user.

- Required Periodicity: A unique code which indicates the

periodicity (in months) between an events occurrence. This code will be used in calculating the next required occurrence. It is supplied by the CDA and is non-accessible to the user.

- Applicability: An indicator which is inputted by the user to signify if a requirement is applicable. Once the requirement is indicated as non-applicable, the system should not display this requirement unless a request is made to display requirements previously designated as non-applicable.

- Last Completion Date: A date indicating when the requirement was last completed. This date and the required periodicity code is used to compute when the next occurrence is due. This date is initially entered by the user and is automatically updated by the calendar generator application upon requirement's completion.

- Next Scheduled Date: A date indicating when the user has scheduled the requirement. It is entered by the user through the calendar generator application. The application from any schedule should void this date upon a requirement completion. The date is automatically updated when the user reschedules the requirement.

- Applicable Training Group: Indicates which training groups are required to participate in a requirement. This data element should indicate either single or multiple training groups established onboard. It is used in conjunction with the calendar generator application to construct a muster list of those individuals participating in the requirement. The training groups are supplied by the user when the data base is loaded, and modifiable by the user.

- Responsible Department: The department assigned the requirement. It is supplied by the user when the data base is loaded and is updatable if responsibilities are changed by

command personnel.

- Responsible Individual: The individual assigned responsibility for the requirements completion. It is supplied by the user when the data base is loaded and can be updated as required.

- Remarks: A section provided for the user to add any specific comments about the requirement.

4.4.2   Ship Assist Visit File (SAF). This data base contains all recommended assist visits available to a fleet unit. This data base interfaces with th alendar generator application for scheduling, executing and monitoring assist visits and for providing status reports. This data base should be identical in structure to SEICF.

The anticipated number of records to be maintained in this data base are expected to be approximately 75, which include assist visits addressed in reference CEO NOTICE 5040 and those assist visits added by the command.

4.4.3   Ship Exercise File (SEXF).   This data base will contain all exercises required of fleet units. The data base will interface with the calendar generator application for exercise scheduling, executing and monitoring.

A similar data base is maintained for each fleet unit at TYCOM headquarters. This data base could be used for the initial loading of the SEXF. The user should be able to validate the information contained in this file against the TYCOM's UNIT TRAINING READINESS STATUS REPORT.

The anticipated number of records to be maintained in this data base is between 250-500, depending on the ship type and associated mission areas. Required exercises by ship type are addressed in applicable TYCOM instructions. This data base contains the same data elements with the following modifications:

- Exercise Code: A unique code number established by the TYCOM in the EXERCISE CRITERIA CATALOG for all exercises required by the TYCOM. It is supplied by the CDA and is non-accessible to the user.

- Exercise Name: The exercise name as provided in the Exercise Criteria Catalog. It is supplied by the CDA and is non-accessible to the user.

- Periodicity: A code which indicates the number of months required for a fleet unit to complete a particular exercise before the current M-rating expires. It is supplied by the CDA and is non-accessible to the user.

- Last Completion Date: The date the exercise was last completed. This date and the required periodicity code are used to calculate when an exercise must be completed and to indicate when the present M-rating will expire.

- Score: The grade assigned to the exercise as reported in the Training Readiness Report. It is inputted by the user.

- Evaluation Method: The method in which the exercise is graded, i.e. self-observed or observed. It is updated by the user.

4.4.4 Ship Lecture File (SLF). This data base will contain a listing of all lectures required to be conducted by a fleet unit. The lectures which are to be loaded are those indicated for the GMT program and all theory and system topics supporting the command PQS watchstations. The command should be able to add additional lectures in support of particular programs as necessary, e.g., medical lectures, small arms training. The potential exist for the number of records to be between 3000 and 4000, depending on ship type.

This data base will interface with the calendar generator

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application for scheduling, executing and monitoring lectures. This data base is structured identical to SEICF. Data elements are accessible, for lectures inputted by the user.

4.4.5   Ship Unique Requirement File (SURF).   This data base contains the requirements, events or miscellaneous information which the user will input based on review of directives. This data base is used by command personnel for those items which cannot be classified into one of the aforementioned data bases. Items which could be conceivably be inputted are special interest items which the Commanding Officer, ISIC, or Group Commanders have expressed an interest in having reported.

   The data base should be structured in the same format as the SEICF. Assigning generic titles to the data elements will allow the user to input information within the constraints established for each data element.   This data base should be designed to provide each working group (i.e. department, division, work center) with their own separate file.   The number of records per file could contain 50-200 records.

4.4.6 Individual Training Record.   This record contains the status of the training received by an individual. The information required for this record is supplied from the muster list which was generated as part of a scheduled event through the function provided in the short range training plan function.   The data elements required for this record are as follows:

- Event Code: The code that corresponds to the event.

- Event Name: The scheduled event name.

- Instructor: The individual who conducted the event.

- Date: The date the individual participated in the event.

4.4.7   School Validation File (SVF).   This data base file
already exist in the SNAP II Administrative Data System.   The
TYCOM training manual list by ship type, those schools for which
commands must maintain graduates onboard.   The SCVF does not
provide an indication for schools required by the TYCOM. In order
to provide this capability to a command, the following
requirements should be met:

- Load the SCVF using each TYCOM required schools listing by ship
type, resulting in a potential savings in file storage
requirements.

- Allow commands the capability to add schools not required by
the TYCOM.   There are unique school requirements and technical
schooling provided by shipyards and private contractors which are
not contained in the tycom training manual.

- Provide a user accessible field which indicates the date in
which the school has been scheduled.

SECTION 5.   ENVIRONMENT

5.1   Equipment Environment. The Training Management Subsystem will operate on commercial computer hardware already provided by SNAP-II, SNAP III and micro-SNAP systems. The system must have processing power sufficient to support the requirements described herein with an average response comparable to current SNAP systems.

The system must support a broad array of printer capabilities, to include word processing printers capable of producing letter-quality output in a variety of fonts.

5.2   Support Software Environment. The Training Management Subsystem will be executed in the software support environment of SNAP-II, SNAP-III and micro-SNAP systems. Additionally, the following items are necessary to support the Training Management Subsystem:

- An operating system capable of supporting simultaneous operation of this subsystem's applications, software and system utilities and providing full use of all the resources of the system from any work station on the system.

- A Database Management System with full shared-access to indexed files and allow locking of data at the record level to insure data integrity. This system will also provide an access security system at least to the following level: a file may be written (to include deleted, written, read, executed); read (to include read and executed); executed only; or excluded from access. These levels must be assignable to users, with assignment to programs, as well, highly desirable.

5.3   Communications Requirements. The Training Management subsystem has no telecommunications requirements.

5.4   Interfaces. The Training Management Subsystem will support interface within the subsystem's applications. Additionally, the

PQS Enhancements application will interface with the system's PQS subsystem already installed. The medium of interface will be data base sharing. The nature and scope of these interfaces are briefly described below. Exact data volumes are at present unknown.

5.4.1   Interfaces among Applications and Subsystems. The primary interface among the various applications is in the area of database sharing. This interface is used to reduce the need for the redundant keeping of data and the inherent consistency problems which such redundancy generates. In no instance will multiple subsystems update the same data items and each subsystem (Training Management and PQS are the only ones applicable in this case) will be totally responsible for individual data collections.

The following is a brief listing of possible data-sharing relationships:

Long Range Training Plan/Short Range Training Plan
    a. Ship Examination/Inspection/Certification File
    b. Ship Exercise File
    c. Ship Lecture File
    d. Ship Assist Visit File
    e. Ship Unique Requirement File
    f. School Validation File

5.5   Summary of Impacts. The incorporation of the Training Management Subsystem into the SNAP system will provide uniformity in the administration of training programs within the command and NAVY-wide, which will, in turn, ensure a standard methodology for implementing, scheduling, executing and monitoring training programs fleet-wide. The organizational and operational impacts on the ADP organization will be minimal due to the fact that the

training subsystem supporting software is already incorporated in either SNAP-II, SNAP-III or micro-SNAP systems and the training management program will be a subsystem of the SNAP system installed. The ADP Development Impacts will be briefly discussed below.

5.5.1   ADP Development Impacts. The incorporation of the Training Management Subsystem into an already existing SNAP system will create additional requirements for software and data conversion. These requirements will require reallocation of assets and resources for programming, testing, implementing and training the system users on   e new applications and databases. The implementation of this subsystem should be done in parallel with the existing manual system, in order to maintain continuity.

5.6   Failure Contingencies. The failure contingencies for hardware and software systems are the same as those depicted in paragraph 3.5.

5.7   Assumptions and Constraints. The SNAP hardware/software operating environment, whether SNAP-II, SNAP-III or micro-SNAP, is not expected to change. The same procedures for system operation, maintenance, backups (SNAP-II only), storage and updating will be maintained. All other assumptions and constraints are the same as those stated in paragraph 2.5.

SECTION 6.   SECURITY

6.1   Background Information. The Training Management Subsystem will contain no classified data or computer programs; however, they will require restricted access and control to ensure validity of data. Any other security and privacy restrictions incorporated in existing SNAP systems and future SNAP developments also apply.

6.2 Subsystem Access Safeguards. The following controls must be incorporated into the proposed training subsystem in order to prevent the usage of limited access functions.

Long Range Training Plan. Controls must be provided to prevent the modification or deletion of the command long range training plan and associated data base files by unauthorized personnel. Use of this function and associated sub-functions should be designated by the command training officer.

Short Range Training Plan. Controls must be provided to prevent the modification or deletion of associated data base files by unauthorized personnel. Use of this function and associated sub-functions should be designated by the command training officer.

Individual Training Accomplishment Records.   Controls must be provided to prevent modification of individual training records. Use of this function should be designated by the command training officer.
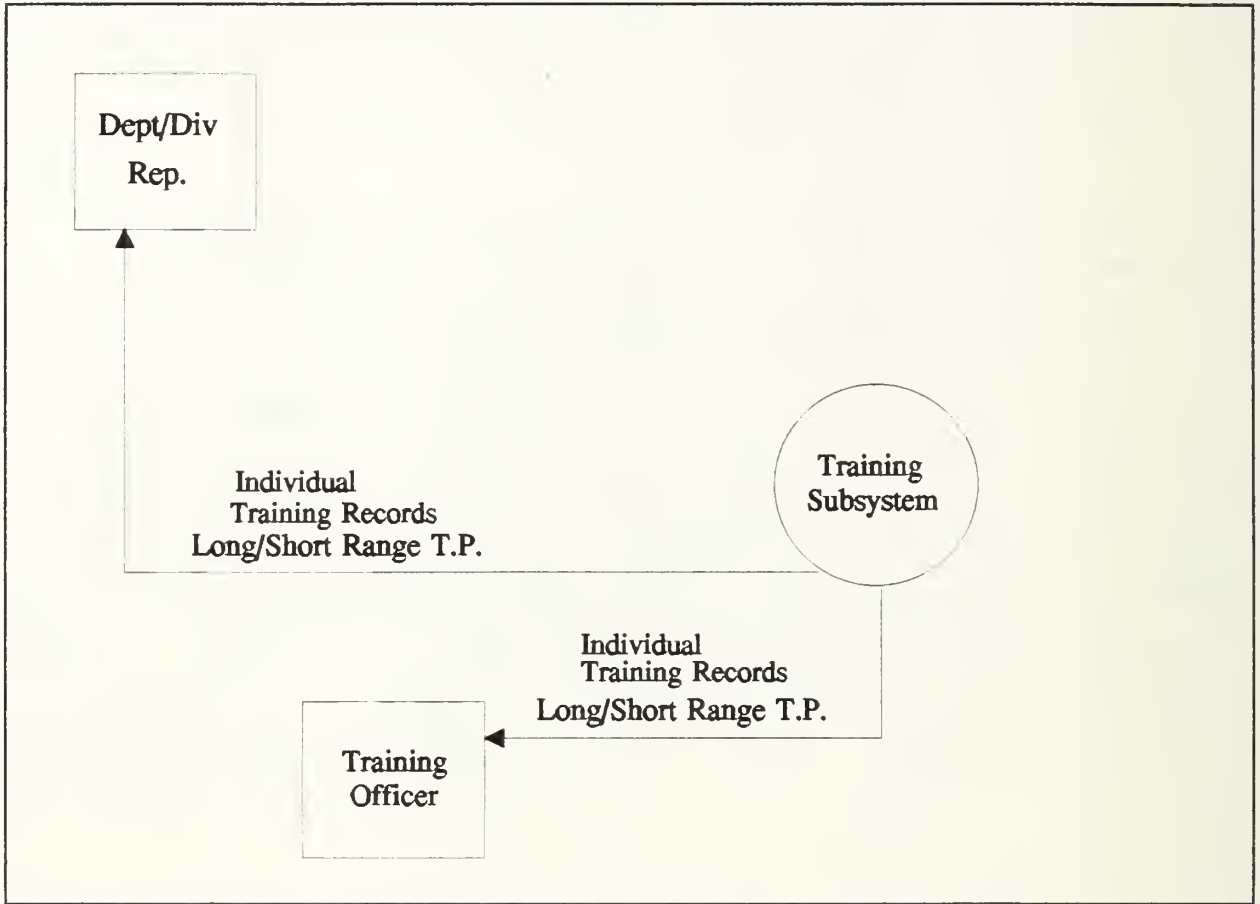
SECTION 7.   SYSTEM DEVELOPMENT PLAN

The initial Training Management Subsystem development is designed to provide the operationally certified subsystem applications to be implemented in existing SNAP-II systems, or concurrent with fleet introduction of SNAP-III and micro-SNAP systems.

NAVMASSO Norfolk, VA will initially revise this IFD to ensure it reflects the most accurate definition of functions to be included in the Training Management Subsystem. A detailed development plan will be provided after initial review and approval of subsystem integration.
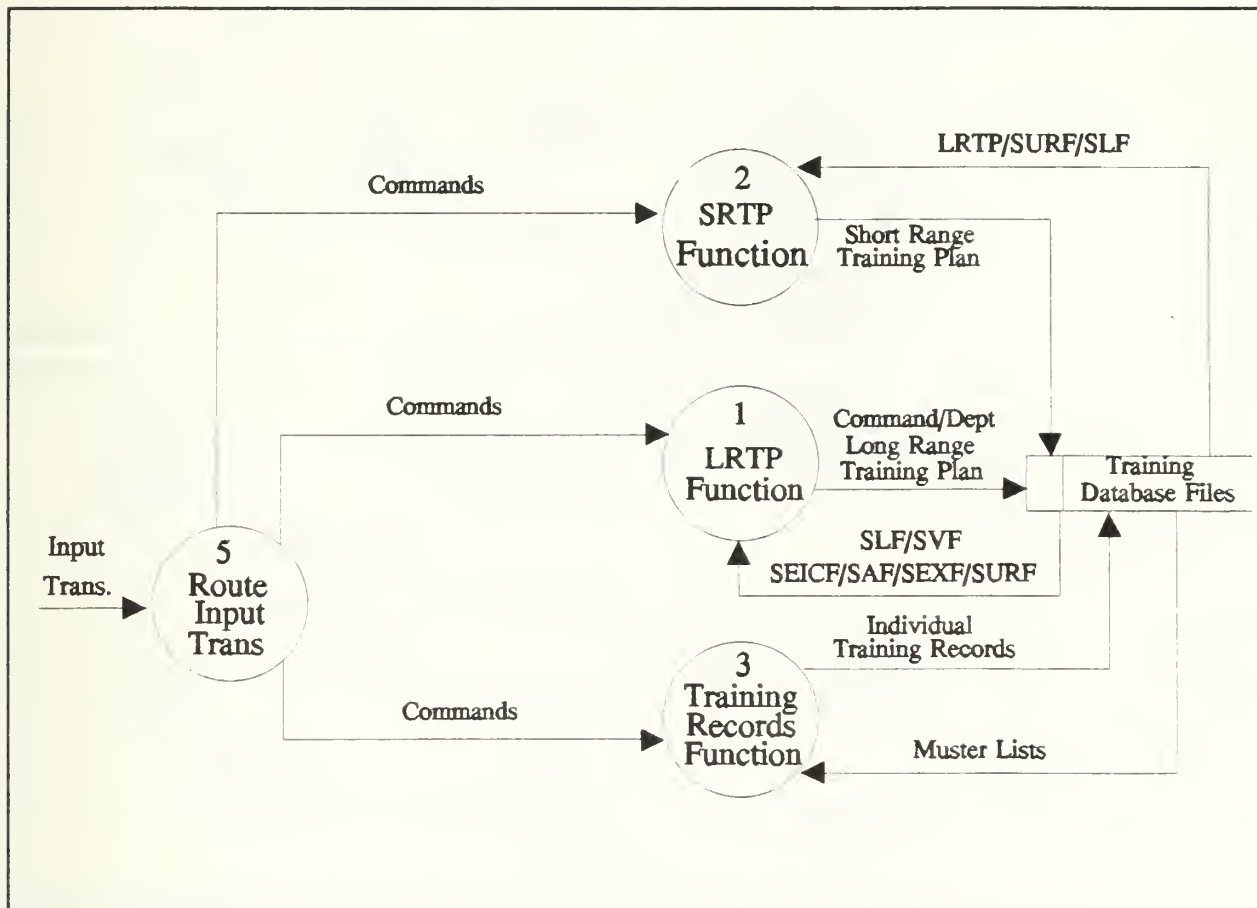
Once the initial system is operational, CINCLANTFLT and/or Commander, Naval Warfare Systems, with the concurrence of the various functional sponsors and Central Design Activities, will prioritize any additional functions for implementations in future releases. Additionally, they will update and revise the system's IFD periodically to ensure the accuracy of the functions in the entire SNAP system. CDAs will provide revised development plans for approval and implementation.
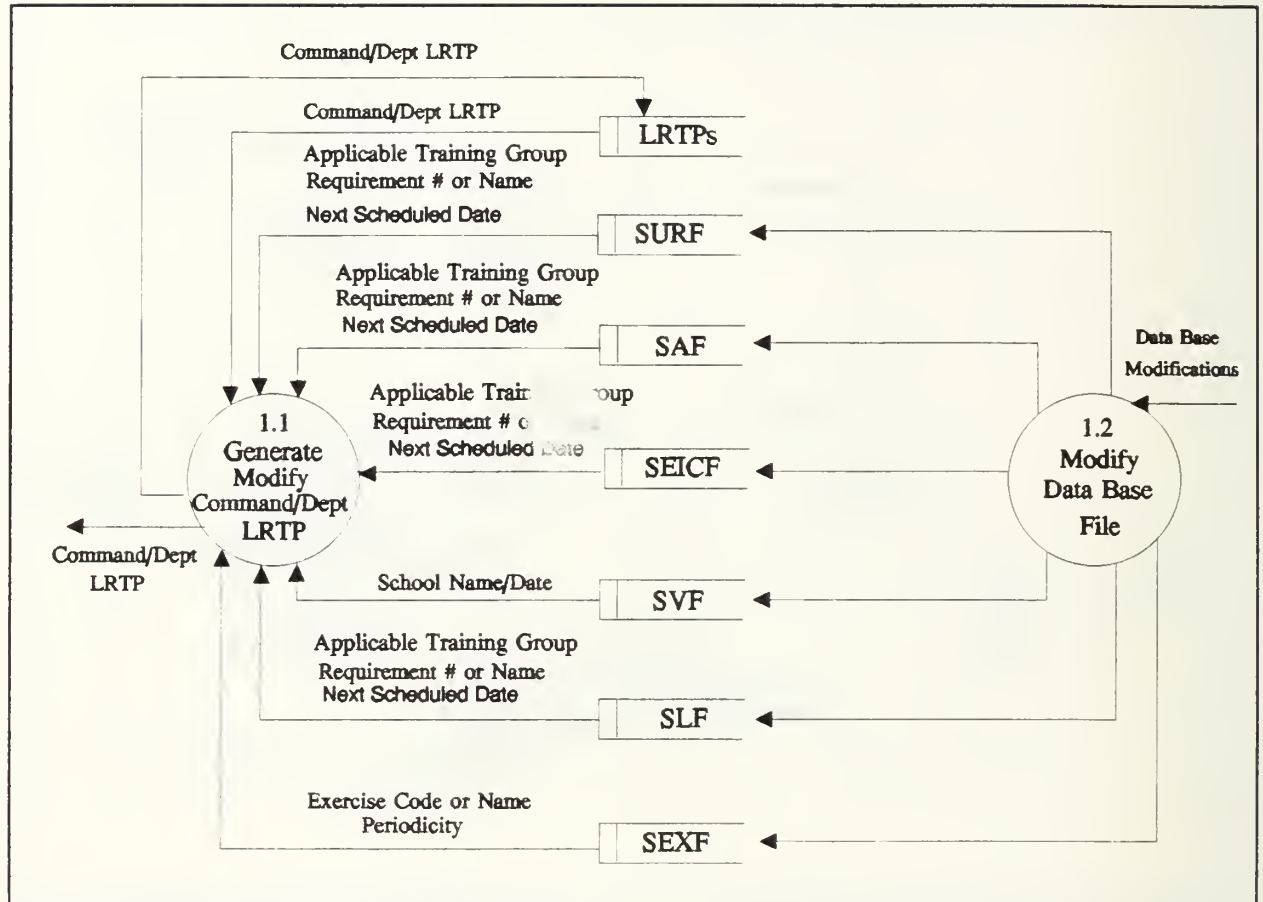
SECTION 8. COST FACTORS

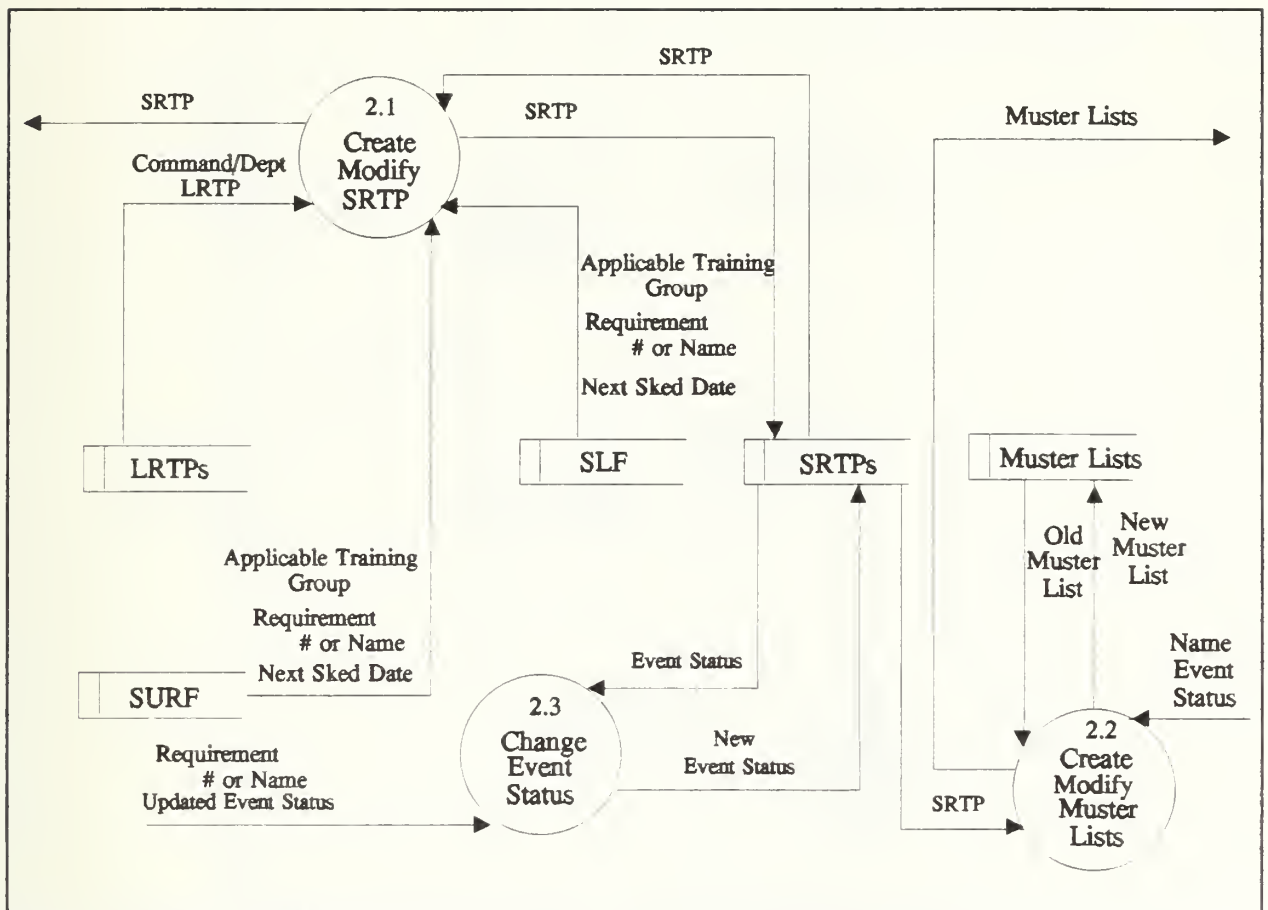The cost factors will be the subject of separate correspondence.

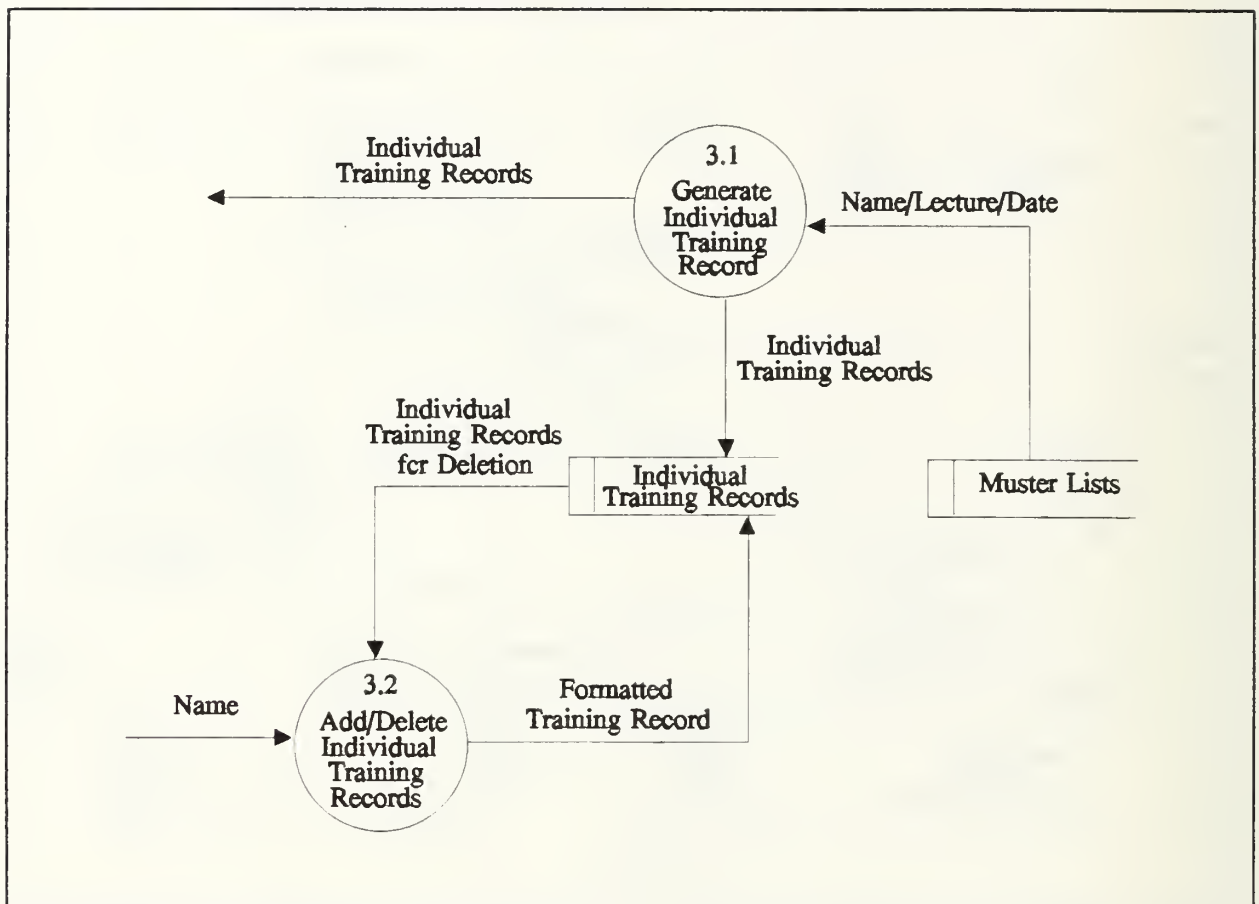Level 0 Data Flow Diagram

Level 1 Data Flow Diagram

Long Range Training Plan DFD

Short Range Training Plan DFD

Individual Training Records DFD

Long Range Training Plan Example

PREPARED

QUARTER   QUARTER   QUARTER   QUARTER

Appendix B

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	JANUARY		FEBRUARY			MARCH	
	1ST-DIV 2ND-DIV	A-DIV B-DIV	S1-DIV S3-DIV	OE-DIV OC-DIV	1ST-DIV 2ND-DIV	A-DIV B-DIV	S1-DIV S3-DIV
	6-DIV 8-DIV	4-DIV 31-DIV	OE-DIV OC-DIV	6-DIV 4TH-DIV	B-DIV 8-DIV	4-DIV 31-DIV	S2-DIV S1-DIV
FIRST AID LECTURES		CLASS CALL					
ALL HANDS LECTURES (CCTV)				DISCIPLINE			
GENERAL MILITARY TRAINING (CCTV)		CAREER COUNSELING			CPO CALL		
SHIPWIDE EVOLUTIONS	UNDERWAY FLOODING	OC ORDNANCE (ORD-1)	MATERIAL INSPECTION SMI	SUPPLY STAND- DOWN		MTT VISIT	
ENGINEERING DEPARTMENT PLANS		AUX/R DIVISION INSPECTION SMI					

Appendix B

MONTHLY TRAINING PLAN

MONTH OF ___MARCH 1986___

TRAINING GROUP ___B-DIVISION___

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3 B9- FLOOD AUX STEAM SYSTEM BT2 HOTEL	4 EHOW ORAL BOARDS	5 B35- F.O. XFER AND STORAGE BT2 GOLF	6 BT L/L ORAL BOARDS	7 B38- ABC SYSTEM BT1 DELTA	8
9	10 B4A EOSS USE LT WILCOX	11 MMOW ORAL BOARDS	12 B46- COLD/HOT CHECKS BTCS ALFA	13 BTOW ORAL BOARDS	14 B45 MLOC PROCEDURES LT WILCOX	15 LIGHT-OFF MACHINERY AM 3/17 FOR MTT
16	17					22
			ENGINEMAN ENGINEERING MOBILE TRAINING TEAM VISIT			
			PMS EVOLUTIONS & CASUALTY CONTROL DRILLS →			
23	24 B53 BOILER LAYUP BTC BRAVO	25 ECOW ORAL BOARDS	26 B40- EEBD BT1 ECHO	27 MM HESS ORAL BOARDS	28 B40- VALVE MAINTENANCE BTC3 ALFA	29
30	31					

SUBMITTED BY: _W. W. Wilcox LT, USN_
B- DIVISION OFFICER

APPROVED BY: _J. P. O'NEAL, LCDR, USN_
CHIEF ENGINEER

WEEKLY TRAINING SCHEDULE

WEEK OF: 9-15 MARCH 1986   DEPARTMENT ENGINEERING

SUNDAY 3/9	MONDAY 3/10	TUESDAY 3/11	WEDNESDAY 3/12	THURSDAY 3/13	FRIDAY 3/14	SATURDAY 3/15
DUTY SECTION I						DUTY SECTION III

PROMULGATED BY: J. D. Jones, LCDR, USN
CHIEF ENGINEER

Appendix B

PERIOD COVERED FROM 3/10/86 TO

B- DIVISION TRAINING RECORD

	3/10/86 GAS (GAS) (OCG) LT WALOY	3/11/86 ELECT SAFETY CCTV	3/17/86 646 CAS CHECK GTCS AUX	3/19/86 FIRST AID BM( )	3/21/86 COALES	3/25/86 GAS LT WALOY			
BTCS A.A. ALFA	X	X	INST.	X	~~BOARD POWER~~	X			
BTC B.B. BRAVO	X	X	X	X	~~BOARD POWER~~	X			
BT1 C.C. CHARLIE	X	X	X	X	X	X			
BT1 D.D. DELTA	X	X	X	X	X	X			
BT1 E.E. ECHO	X	X	X	X	X	X			
BT2 F.F. FOXTROT	X	X	X	X	X	X			
BT2 G.G. GOLF	X	X	X	X	X	X			
BT2 H.H. HOTEL	LV	LV	LV	LV	X	X			
BT3 I.I. INDIA	X	X	X	X	NA	X			
BT3 J.J. JULLIET	X	X	X	X	NA	X			
BT3 K.K KILO	X	X	X	X	NA	X			
BT3 L.L. LIMA	X	X	X	X	NA	X			
BT3 M.M. MIKE	LIB	X	X	X	HA	X			
BT3 N.N. NOVEMBER	X	X	X	X	NA	X			
BT3 O.O. OSCAR	X	X	X	X	NA	X			
BT3 P.P. PAPA	X	X	X	X	NA	X			
BT3 R.R. ROMEO	X	X	X	LIB	NA	X			
BT3 S.S. SIERRA	X	X	X	X	NA	X			
BTFN T.T. TANGO	LIB	X	X	X	NA	X			
BTFA U.U. UNIFORM	X	X	X	X	NA	X			
BTFA V.V. VICTOR	X	W.P.	X	X	NA	X			
FA W.W. WILLIAM	X	X	X	X	NA	X			
FA X.X. XRAY	X	U.A.	U.A.	U.A.	NA	U.A.			
FA E.Z. ZEBRA	X	X	X	X	NA	X			

APPENDIX B: OTHER TRAINING RELATED SYSTEMS FOR SNAP

Two of the recommended training enhancements in Ref. 1 have already been acted upon by NAVMASSO and the functional manager for SNAP-III (CINCLANTFLT Information Systems Division). These enhancements are the existing SNAP Schools and PQS applications. Both of these applications are independent of the proposed Training Administrative Subsystem. This appendix will discuss possible future functions within the PQS and Schools applications.

I. PQS Application Enhancements

The current SNAP ADM subsystem has a PQS application that allows the user to review and update shipboard personnel qualifications, print watch station history reports and print progress reports by watchstation and individual. The PQS application does not support these same functions for Interim qualifications, which commands are required to track in accordance with Naval Education and Training Instruction 43100-1C.

This section describes enhancements to the existing PQS application which would provide the required documentation and tracking of Interim PQS qualifications. The existing function capabilities of the current PQS subsystem should be augmented with the following:

- Provide the ability to review/update personnel Interim qualifications.
- Provide the ability to list and print those personnel having been granted interim qualifications by individual, work center, division, department, command, watchstation and any combination of these criteria.
- Provide the ability to list and print those personnel that are past due in PQS watchstation

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qualification.

   - Provide the ability to list and print by date those personnel coming due to assigned watchstation completion deadline dates.

   - Provide the ability to generate a PQS Interim Qualification Letter for an individual, allow the commanding officer to approve the letter, and the ability to maintain each letter.

   NAVMASSO is currently upgrading the SNAP PQS application to include the interim qualification enhancements discussed above.

II.   Schools Subsystem Enhancements.

   The current SNAP-II ADM subsystem has a Schools application that tracks formal school requirements, prints projected loss and gain reports, schools status reports and course requalification requirements and allows for user review and update of the school requirements. [Ref. 2] Shipboard training managers make very little use of this function due to the fact that their school tracking efforts are duplicated in their manually-kept division officer notebooks and by the command's administrative office.

   This section describes the applicability of a possible interface between the existing SNAP ADM Schools application and the proposed Training Administrative Subsystem. The purpose of this interface would be to allow shipboard training managers to schedule formal school attendees like any other training event, which would add continuity to both the training and schools applications in addition to making the manager's task of coordinating training efforts and assets a lot simpler.

   This enhancement would consist of an application that interfaces formal school requirements with the

proposed Training Management Subsystem's muster lists in the Short Range Training Plan application. In the proposed Training Management Subsystem, the Short Range Training Plan application provides the ability to create and modify muster lists of those personnel required to attend or participate in a training event. An interface between the Schools application in the SNAP-II ADM subsystem and the Training Management Subsystem may be accomplished via the School Validation File used by both the ADM and Training subsystems and the Schools Personnel File in the ADM subsystem. If access is provided to the Schools Personnel File via the Short Range Training Plan, muster lists can be created which list those personnel required to attend formal training schools as well as shipboard training events.

NAVMASSO is considering this particular enhancement as a possible future upgrade to the SNAP ADM subsystem. Due to the present independent functionality of the proposed Training Administrative Subsystem from the existing Schools system, this enhancement is considered beyond the scope of this thesis.

LIST OF REFERENCES

1. Liss, S.M., _SNAP II Training Administrative Enhancements_, M.S. Thesis, Naval Postgraduate School, Monterey, California, September 1987.

2. NAVMASSO Document No. Q-002 SS-001 A, Subject: _Shipboard Non-Tactical ADP Program (SNAP) II Automated Information System AIS Administrative Data Management (ADM) Subsystem Specification_, April 1986.

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   Naval Postgraduate School
   Monterey, California 93943

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   Code As/Hg
   Department of Administrative Sciences
   Naval Postgraduate School
   Monterey, California 93940

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   Commander, Operational Test and
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   Chesapeake, Virginia 23320

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   Building NH3 South
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